

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
12 August 2004 (12.08.2004)

PCT

(10) International Publication Number
WO 2004/066961 A3

(51) International Patent Classification⁷: **A61K 39/12,**
C12Q 1/70

(21) International Application Number:
PCT/US2004/000635

(22) International Filing Date: 12 January 2004 (12.01.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/441,369 20 January 2003 (20.01.2003) US

(71) Applicant (for all designated States except US): **ST. JUDE
CHILDREN'S RESEARCH HOSPITAL** [US/US]; 332
North Lauderdale Street, Office Of Technology Licensing,
Mail Stop 742, Memphis, TN 38105 (US).

(71) Applicants and

(72) Inventors: **HURWITZ, Julia** [US/US]; 1846 Hunters
Hill Drive, Germantown, TN 38138 (US). **SLOBOD,**
Karen [US/US]; 2463 Madison Avenue, Memphis, TN
38112 (US). **PORTNER, Allen** [US/US]; 2752 Galaxie,
Bartlett, TN 38134 (US). **COLECLOUGH, Christopher**
[US/US]; 1843 Hunters Hill Drive, Germantown, TN
38138 (US).

(74) Agent: **ELMER, James, Scott**; 332 North Lauderdale
Street, Office Of Technology Licensing, Mail Stop 742,
Memphis, TN 38105 (US).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), Euro-
pean (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR,
GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a
patent (Rule 4.17(ii)) for all designations
- as to the applicant's entitlement to claim the priority of the
earlier application (Rule 4.17(iii)) for all designations
- of inventorship (Rule 4.17(iv)) for US only

Published:

- with international search report

(88) Date of publication of the international search report:
9 December 2004

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: USE OF SENDAI VIRUS AS A HUMAN PARAINFLUENZA VACCINE

(57) Abstract: Immunogenic compositions to protect against human parainfluenza (hPIV) virus infection are provided. The com-
positions comprise an unmodified Sendai virus that can be safely administered to human subjects, particularly young children, to
protect against symptoms and health risks associated with hPIV infection.

WO 2004/066961 A3

INTERNATIONAL SEARCH REPORT

PCT/US04/00635

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61K 39/12; C12Q 1/70
US CL : 424/211.1; 435/5

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 424/211.1; 435/5

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WANG et al. A Protease Activation Mutant, MCVES1, as a Safe and Potent Live Vaccine Derived from Currently Prevailing Sendai Virus, Journal of Virology, May 1994, Vol. 68, No. 5, Pages 3369-3373, especially abstract and page 3370-3371, bridging paragraph.	1-5
A	MURPHY et al. Live-attenuated virus vaccines for respiratory syncytial and parainfluenza viruses: applications of reverse genetics, Journal of Clinical Investigation, July 2002, Vol. 110, No. 1, pages 21-27, entire document.	1-16



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

24 August 2004 (24.08.2004)

Date of mailing of the international search report

22 SEP 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

Stacy B Chen

Telephone No. 703-308-0196

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/00635

Continuation of B. FIELDS SEARCHED Item 3:

EAST, CASONLINE, MEDLINE, BIOSIS, EMBASE, CAPLUS, SCISEARCH

search terms: hurwitz, slobod, portner, coleclough; sendai, human parainfluenza, hpiv, piv, immunization, vaccination, cross-protection, respiratory, t-cell response